

6.3 Vectors in the Plane - Day 2

Magnitude:	Length of a vector
Direction angle:	The angle the vector makes with the positive x-axis.

Example 1: \vec{v} has a magnitude of 3cm and a direction angle of 40° . \vec{w} has a magnitude of 5cm and a direction angle of 150° . Use the tip-to-tail **AND** the parallelogram method to find the magnitude and the direction angle of the resultant vector of $\vec{u} + \vec{v}$.

Tip-to-tail Method	Parallelogram Method
Magnitude	Direction Angle

Example 2: Use the given characteristics of the vectors to find the magnitude and the direction angle of the resultant vector of $2\vec{u} + \vec{v}$. Use the tip-to-tail method **OR** the parallelogram method.

$\|\vec{u}\| = 1.5 \text{ cm}$, \vec{u} has a direction angle of 45°

$\|\vec{v}\| = 2 \text{ cm}$, \vec{v} has a direction angle of 100°

Solve each of the following. Round answers to the nearest hundredth.

Example 3: A plane flies due west at 250 kilometers per hour while the wind blows south at 70 kilometers per hour. Find the plane's resultant velocity and bearing.

Example 4: A plane flies east for 200 kilometers, then 30° east of south for 80 kilometers. Find the plane's distance travelled and bearing from its starting point.

Example 5: One force of 100 units acts on an object. Another force of 80 units acts on the same object at a 40° angle from the first force. Find the magnitude and direction of the resultant force on the object.